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THE LITTLE-KNOWN SMALL HOUSE RUINS IN THE COCONINO FOREST

BY

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M. R. F. AND H. S. COLTON

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THE LITTLE-KNOWN SMALL HOUSE RUINS IN THE COCONINO FOREST

By M. R. F. and H. S. COLTON

Introduction

THE present paper is the result of a survey of the "small house" ruins in a limited area east of Flagstaff, Arizona. Its aim is not only to call attention to the existence of such antiquities in this region but also to show some of the relations that exist between them and the physical characteristics of the neighborhood such as topography, water supply, and arable land.

Over a wide area of the high plateau of New Mexico and Arizona is found this type of ruin which has been described by various authors as the small house. In contrast to the extensive pueblo and the well-preserved cliff ruins these small houses are either inconspicuous heaps of stone or are indicated by faint traces of room outlines. So faint are the traces of the ruin and so little reward has come from the few that have been excavated that archaeologists as well as curio-hunters have largely passed them by. To be sure some mention of them has been made by Bandelier (1892), Cushing (1886), Hewett (1904), Hough (1901), Kidder (1915), Nelson (1916), Prudden (1903) and Shimer (1910) but these are usually but brief references made in passing to a more interesting subject. The small house has been neglected as a basis of serious study.[1]

Method

The region explored extends from the Dry Lake hills and Elden mountain, outlying masses of the San Francisco peaks, south to Walnut canyon and east from Flagstaff to Turkey tank and Winona. (See figs. 27 and 28.) This includes an area of some hundred

[1] This was written in 1916. Since then several papers have appeared on the Small House Ruins.

square miles. On a whole this was explored in a most superficial way. Yet about eight square miles were explored with care. In these eight square miles nearly all the antiquities have been recorded. In the rest of the region many more may be found.

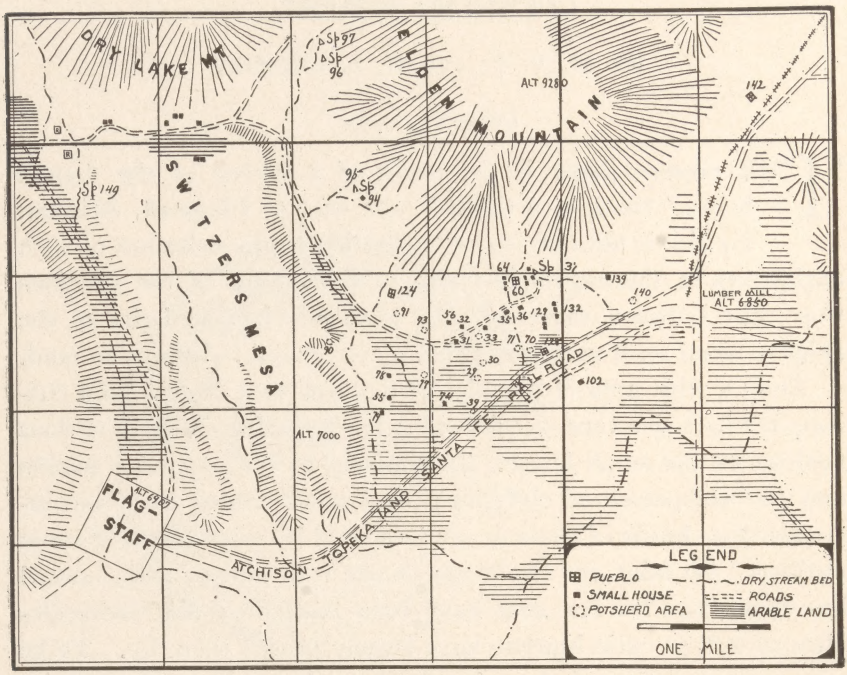

FIG. 27.—Map of region south of Elden mountain.

In searching for the faint traces of former habitations the following method was used. It was our custom to walk or ride across the country, our eyes more or less glued to the ground. When potsherds were discovered the region was carefully searched. With very few exceptions a ruin was found near by. The dimensions were then paced, a method of measurement within the limit of error for an unexcavated ruin. All the decorated surface potsherds were collected as well as a few of the undecorated ones which were always in much greater abundance. A sketch was made on which the dimensions as well as the points of the compass were indicated and information as to the location was recorded. In some cases photographs were made, yet these were unsatisfactory as they

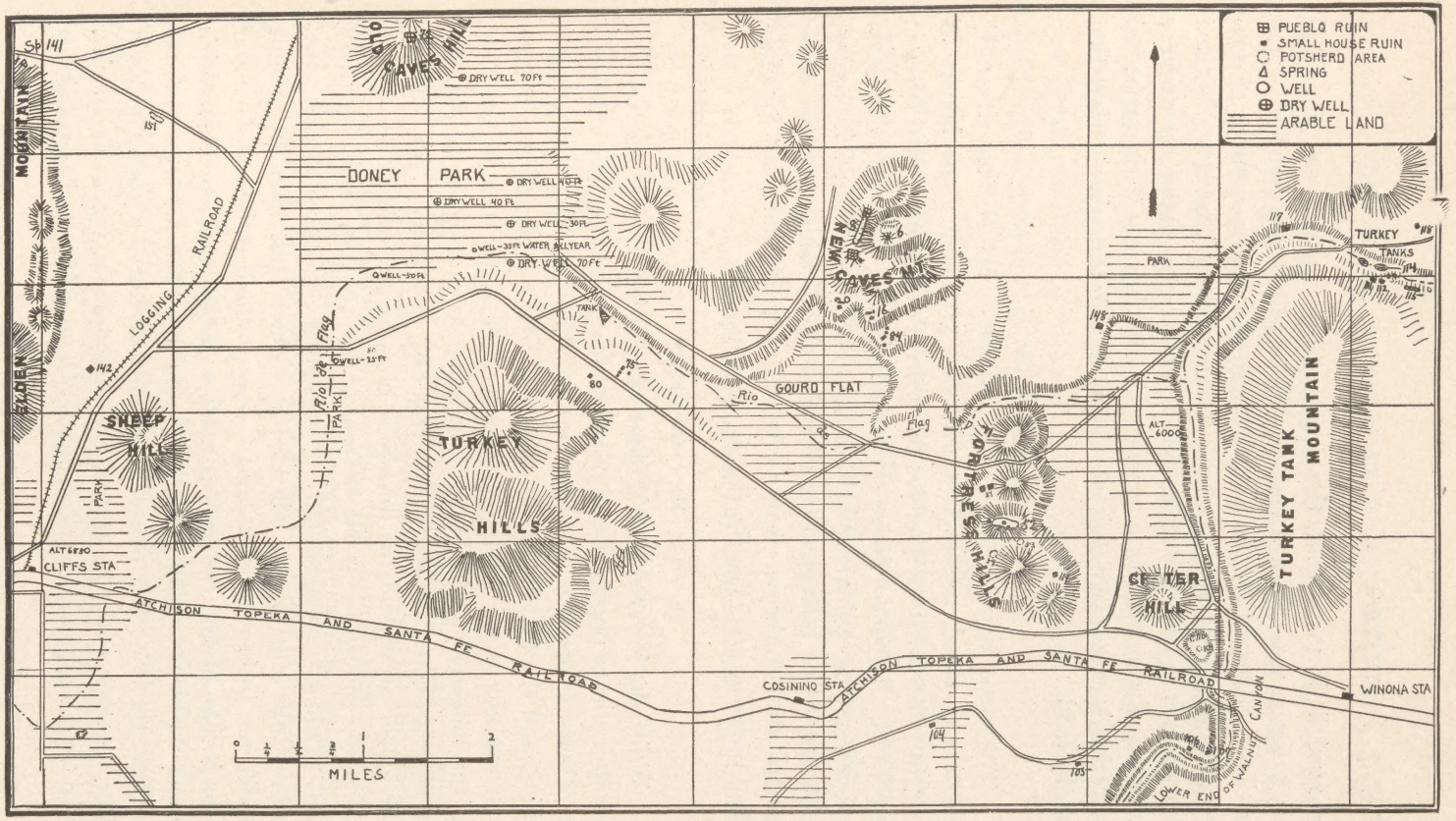

FIG. 28.—Map of region east of Elden mountain.

showed little more than the surrounding scenery. On discovery each house was given a serial number which was marked on all artifacts collected on the site. Where there are a number of one-roomed houses clustering about a many-roomed house as is often the case, it is convenient to refer to the cluster under the number and that the number be given the principal house. This method of notation is convenient as it allows one to give the ruin a designation in the field.

SITES

The sites may be classified as follows: (*a*) Hunter sites; (*b*) shelters of wood, adobe, or cornstalks; (*c*) small stone houses of one to ten rooms; (*d*) pueblos or clusters of many-roomed houses; (*e*) forts. In one of these classes all sites in this region may be placed, not excepting the well-known cliff houses and cavite rooms. Like any other biological classification the divisions between these groups are not always clear, we have intergradations, but for practical purposes the classification is convenient.

HUNTER SITES

While the lower end of Walnut canyon has held at one time or another a large population of people of pueblo culture, the evidences of whose occupation is everywhere exhibited by cliff ruins, house ruins, and the accompanying potsherds, the upper end of the canyon exhibits none of these features. The same rock ledges exist in the limestone which have been taken advantage of to the east to such an extent at the well-known cliff dwellings. Not only are the ledges present in the limestone but also there are caves in the Coconino sandstone at the bottom of the canyon, large dry caves that would give good shelter. Excavating the floor of such a cave, about three-fourths of a mile east of Fishers tank, brought to light under ten inches of sticks and faeces of small rodents and under four inches of fine brown soil a layer of charcoal one inch thick under which was yellow sand. From this charcoal layer was recovered the lower jaw bones of an adult as well as a young Virginia deer together with the end of a humerus from the same species. Also there was found the tibio-tarsus of a large bird and one obsidian

chip. This last was the only artifact found. As no potsherds are found in this part of the canyon it is probable this cave was the refuge of some wandering hunter.

Another hunter site (90) was discovered among the boulders on the talus on the east side of Switzer's mesa. These are here natural shelters which have a commanding position overlooking a little valley. About are an abundance of obsidian chips as well as a few potsherds showing that not only hunters had occupied this shelter but also people of pueblo culture.

SITES WITH PUEBLO CULTURE

As this is a survey the other sites can more conveniently be considered with respect to locality and from this point of view the region naturally divides itself into districts depending on water supply, arable land, and the possibility of defense. These are as follows:

(1) A little park between Switzers mesa and Dry Lake mountain.
(2) About Elden spring.
(3) About Doney Park.
(4) Winslow Road between Doney Park and Gourd Flat.
(5) Gourd Flat.
(6) Fortress Hills.
(7) Turkey Tank.
(8) Walnut Canyon.

Switzer's Mesa Group

Between the north end of Switzer's mesa and Dry Lake mountain is a small park of twenty or thrity acres. At present this park contains two fallow fields full of weeds. Two tumble-down cabins lie to the north on the edge of the forest overlooking the fields. Around this park are ten small house ruins. These are all shown on figure 29.

Casa 21 A. Township 22N–R7E Sec. 34. This is a three-roomed house composed of two large rooms 15 × 18 and 15 × 15, with a small one 6 × 6. Here was found one half a basalt metate stone. Black and white decorated potsherds collected.

Casa 21 B. Township 22N–R7E Sec. 34. A one-roomed house a few feet NE. of Casa 21 A. The traces were so faint that the room could not be measured.

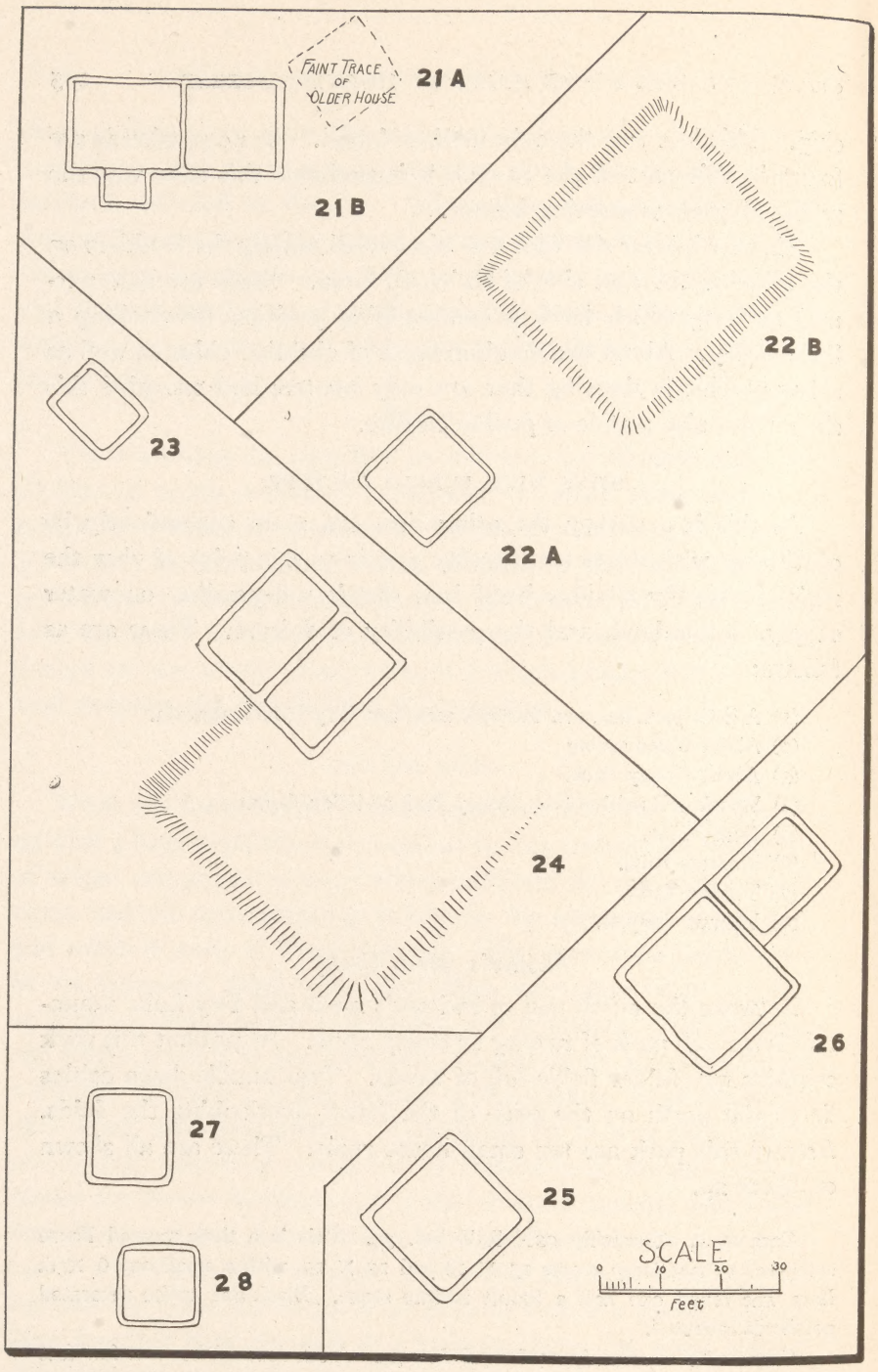

FIG. 29.—Plans of a group of small house ruins about a little park between Switzer's mesa and Dry Lake mountain.

Casa 22 A. Township 22N–R7E Sec. 34. A one-roomed house 915 × 15 feet. Pottery sherds were very scarce, only two or three black and white being found.

Casa 22 B. Township 22N–R7E Sec. 34. Northeast of Casa 22A 24 feet is a mound 42 × 36 feet.

Casa 23. Township 22N–R7E Sec. 34. A house 9 × 12. One sherd of yellow ware with brown design was found here. But three others of this type were found on this side of the Little Colorado and they were on the edge of a lava flow 50 miles NE. unassociated with other artifacts.

Casa 24. Township 22N–R7E Sec. 34. A house of two rooms 30 feet southeast of Casa 23. The rooms are both about 12 × 21. On the southern corner is a levelled terrace below which potsherds are very abundant. A two-colored red and black ware found. The ruins are better preserved than the others in this group suggesting that they were occupied at a later period than any of the others.

Casa 25. Township 22N–R7E Sec. 33. A one-roomed house 18 × 18.

Casa 26. Township 22N–R7E Sec. 33. A two-roomed house 39 feet NE. of Casa 25. The rooms are 18 × 21 and 18 × 12. No decorated ware.

Casa 27. Township 21N–R7E Sec. 4. All the houses mentioned above are north of the park, this house as well as the next following is found to the south. Casa 27 is a one-roomed house 15 × 12. Red potsherds with a black design found here.

Casa 28. Township 21N–R7E Sec. 4. This house located 12 feet south of 27 is of one room 12 × 12.

The source of water for the Switzer's mesa group seems to be from the arroya that passing the east side of the Flagstaff reservoir flows over part of the Switzer's mesa lava. Here there is running water for a short distance,—Spring 149. (T21N–R7E Sec. 5.) It is within half a mile of the nearest house Casa 25. Springs no. 96 and 97 are within a mile of the most easterly house Casa 21.

Elden Spring Group

This group of houses is found in the forest within sight in most cases of the parks that lie on the gently sloping *bajada* at the base of Elden mountain. Most of the ruins are found in T21N–R7E, Sections 11 and 12. The only other source of water is spring 95 which lies three-fourths of a mile to the north of the farthest outlyer of the group. Tank 147, an artificial tank, is close to Casas 78, 79 and 55, and may be situated on the site of an earlier one that supplied water to those houses.

Elden spring (37) is a veritable mine for potsherds. They are everywhere abundant. The ruins found about this spring can be divided into two classes: (a) small houses and (b) pueblos.

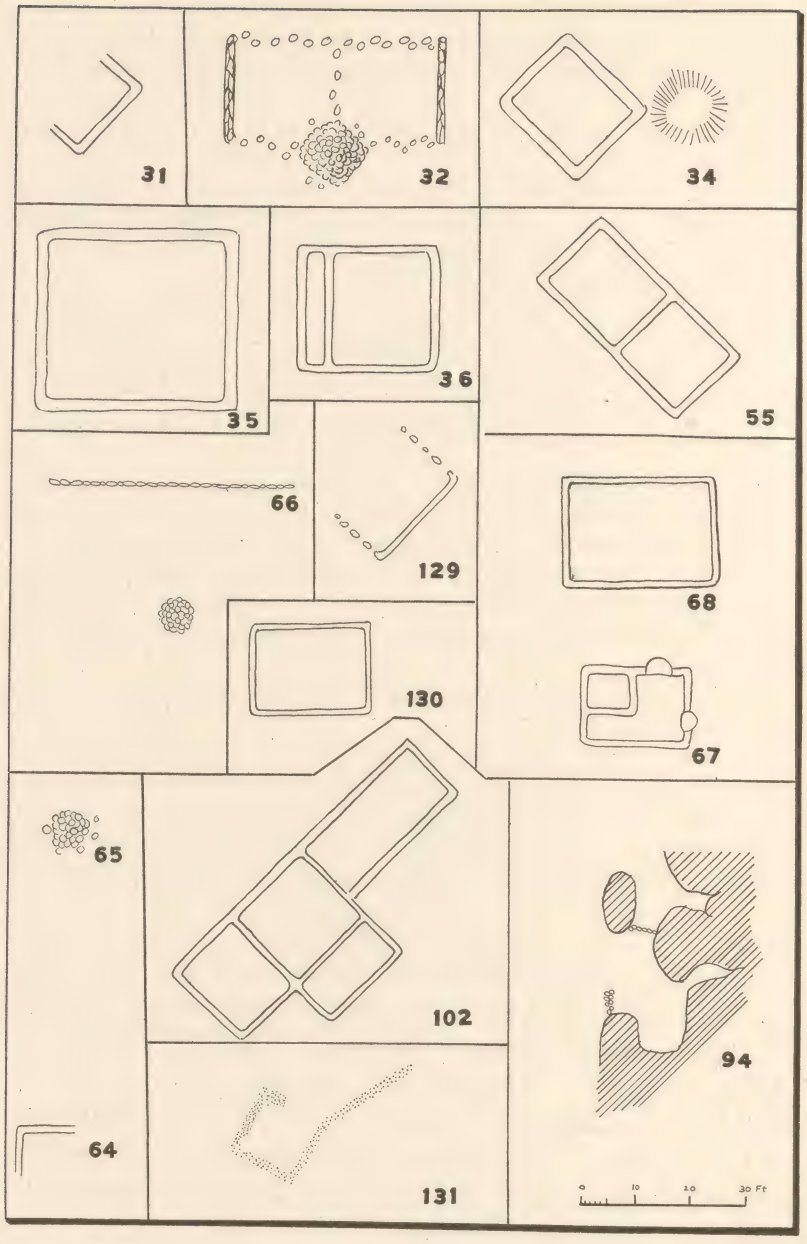

FIG. 30.—Plans of a number of small house ruins which center about Elden spring.

A. Small Houses. Township 21N–R7E. Section 12

Casa 29. In Eben Greenlaw's pasture. A sherd area that contained some black and white was found in the center of which was a mound. A ditch six feet long and three and a half feet deep was cut into the mound and the only possible artifact found was a clay nodule. The mound might have been built by prairie dogs.

Casa 30. A center of abundant sherds was found at the end of the above pasture. As it was in a cultivated field any mound or other trace of a house had been removed. No decorated pottery.

Casa 31. East of gate 200 feet in a pasture at foot of the mountain a single-roomed house was found, with a wall very well preserved. This may not have been a prehistoric dwelling, as no potsherds were found about it. On the other hand there was nothing about to indicate the site of a modern habitation. (Fig. 30, no. 31.)

Casa 32. East of 32 there is another house of two rooms not well preserved. They seemed about 18 × 18. On the south was a mound of stones. (Fig. 30, no. 32.)

Casa 33. A sherd area with some piles of stones but with no distinct traces of houses. No decorated potsherds.

Casa 34. A single-roomed house 15 × 18 to the east of which is a mound. Potsherds very abundant. (Fig. 30, no. 34.)

Casa 35. On the west side of the arroya south of Elden cabins is a very large single-roomed house 30 × 33. Black and white decorated ware. (Fig. 30, no. 35.)

Casa 36. On the east side of the above arroya is another house with one large room 18 × 21, with a narrow room but three feet wide adjoining. The stones from Casas 36 and 35 had been used in the construction of a dam by the Eldens and in the foundations of the two log cabins. Black and white decorated ware. (Fig. 30, no. 36.)

Casa 37. At Elden spring is the trace of a very small house 6 × 4.

Casa 38. In the arroya 50 to 75 feet below is the trace of a larger house 12 × 12.

Casa 39. In the cultivated field of C. A. Greenlaw near the road was a sherd area with near by a lot of stones piled against the fence. This suggests the site of another ruin.

Casa 56. The very dim outline of a house a hundred feet north of Casa 31. Sherds present.

Casas 64 and 65. Only traces of houses visible. 150 feet NW. of Casa 57 Elden pueblo. (Fig. 30, nos. 64 and 65.)

Casa 66. Traces of walls and houses in the chaparral but nothing clear. North of 64 and 65. (Fig. 30, no. 66.)

Casa 67. House west of Elden spring, 200 feet NE. of Casa 58 Elden pueblo. Two rooms—a small one cut out of the large one. (Fig. 30, no. 67.)

FIG. 31.—Photograph of casa 74 after excavation.

sherds with black design and clay nodules. The original floor was 8 inches below the present level of the pasture. Black and white decorated potsherds found scattered about the region. (Figures 31, 32.)

Casa 77. A mound 16 × 12 feet, 12 inches high. There are many sherds about. It was not proved to be a house ruin.

Casa 78. A mound 45 × 15 feet. NW.–SE. is the long axis. This is the center of a sherd area. Many scattered rocks about.

Casa 79 (Section 14). Just over the fence from section 11 is a mass of scattered dacite rocks indicating a house ruin about 42 feet by 12 feet. Here was found the fragments of a metate stone which when pieced together gave more than half of the tool.

Casa 90. Caves in the talus of Switzer's mesa. They are just under the ruin and seem to have

Casa 68. House of one room 18 × 27 feet. 15 feet north of Casa 67. (Fig. 30, no. 68.)

Casa 70. Sherd area—pile of stones removed by rancher.

Casa 71. Sherd area—slight mound—no stones for building material in the immediate neighborhood. Red and black ware.

Casa 73. This is a very doubtful ruin. There are stones about and the trace of a wall across a little arroya. Sherds were found. It may be part of an old trail indications of which were found in other places or perhaps a tank.

Casa 74. A small house 6 × 14 in C. A. Greenlaw's pature. This was excavated July 31. There was found a broken mano, some plain red sherds, red

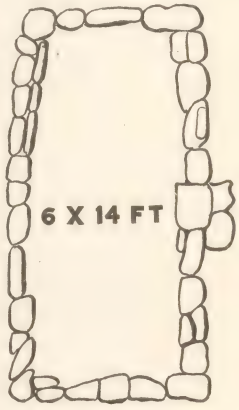

FIG. 32.—Plan of casa 74 after it was excavated. Below is a section of the same.

been more probably the temporary habitations of hunters. Obsidian chips are more abundant than pottery.

Casa 91. A sherd area just south of pueblo 124. May be nothing more than part of the trail to Elden spring.

Casa 94. A cave on west side of Elden mountain. A sandstone mano and parts of a metate stone found—remains of walls. (Fig. 30, no. 94.)

Casa 102. A four-roomed house, south of Walnut canyon road on limestone, one half mile from railroad crossing. Sherds very abundant both black and white being found. (Fig. 30, no. 102.)

Casa 128. Large mound facing the main road. Many sherds, some red and black. Many of the loose stones had been removed to fence line. 72 feet across. Several rooms may be traced. To the east are other smaller mounds. (Fig. 33, no. 128.)

Casa 129. House, one wall distinct, 21 feet long. Old worn sherds. South of chimney of old cabin. Black and white, red and black. (Fig. 30, no. 129.)

Casa 130. North of old chimney is a single-roomed house, 21 × 15 feet. (Fig. 30, no. 130.)

Casa 131. NNE. of Casa 130 are two parallel rows of boulders. These seem to mark an old road to Elden spring and are of recent date. One of these "fences" cuts the ruin of a single-roomed house 12 × 12. A broken metate stone was found near by. (Fig. 30, no. 131.)

Casas 132–138. Are a group of houses buried in the chaparral, the ruins of which are all indistinct. The houses are located on little ridges between arroyas. (Fig. 33, no. 132–138.)

132 Is a depression 30 feet across.

133 Two such depressions with a wall to the north.

134 Faint trace of a single-roomed house.

135 A depression with walls recognized on the south side—also traces of rooms.

136 Faint trace of a house 10 × 12 feet.

137 Faint traces of another house.

138 Faint traces of a house 12 × 15 feet east across an arroya. There is a mound just south of this house.

Township 21N–R8E. Section 6

Casa 139. Back of the Greenlaw lumber mill is a small house 18 × 20. Red and black sherds abundant. This is on the old trail from pueblo 142 to Elden spring.

Township 21N–R8E. Section 7

Casa 140. A potsherd area. This may be part of an old Indian trail or it may be the site of a house. Red and black as well as black and white decorated potsherds.

B. Pueblos

(1) Elden Spring Pueblo

The Elden Spring Pueblo is in Township 21N–R7E, Section 12. This covers an area about 370 × 95 feet and is situated on a ridge between two shallow arroyas, about 100 yards west of Elden spring. Red and black as well as black and white sherds found. (Fig. 33, nos. 57–69.)

Casa 57. A depression 18 inches deep and 18 feet in diameter.

Casa 58. A depression bounded by rectangular walls 30 feet across.

Casa 59. This is a large house showing traces of many rooms.

Casa 60. This is another large house 36 × 60 but on the surface of the ground shows no trace of rooms.

Casa 61. A small house.

Casa 62. A complex of rooms the relations of which are not clear. Black and white decorated potsherds.

Casa 63. A wall 42 feet long alone visible.

Casa 69. Another depression, 18 inches deep, 60 feet south of 63.

(2) Pueblo 124 (Pl. x, fig. 2)

This Pueblo is located in Township 21N–R7E, Section 11. It lies about a mile west of the Elden Spring Pueblo. It differs from the latter in that much stone was used in its construction so that the ruin is now composed of heaps of dacite boulders some three or four feet high. (Fig. 33, nos. 92, 107, 120–127.)

Casa 92. Is a single-roomed house, 15 × 18 feet. It differs from the other parts of this ruin in that the outline of the room is distinct there being no pile of stones on the site.

Casa 120. 12 × 30 mound 2 feet high. Red and black, black and white decorated potsherds collected.

Casa 121. 12 × 54.

Casa 122. 12 × 50. Rooms visible. Black and white potsherds collected.

Casa 123. Pile of stones.

Casa 124. 30 × 30. Mound of stones four feet high.

Casa 125. 12 × 12. Mound of stones.

Casa 126. 15 × 15. Mound of stones.

Casa 127. 15 × 15. Mound of stones.

Casa 107. 15 × 15. Mound of stones.

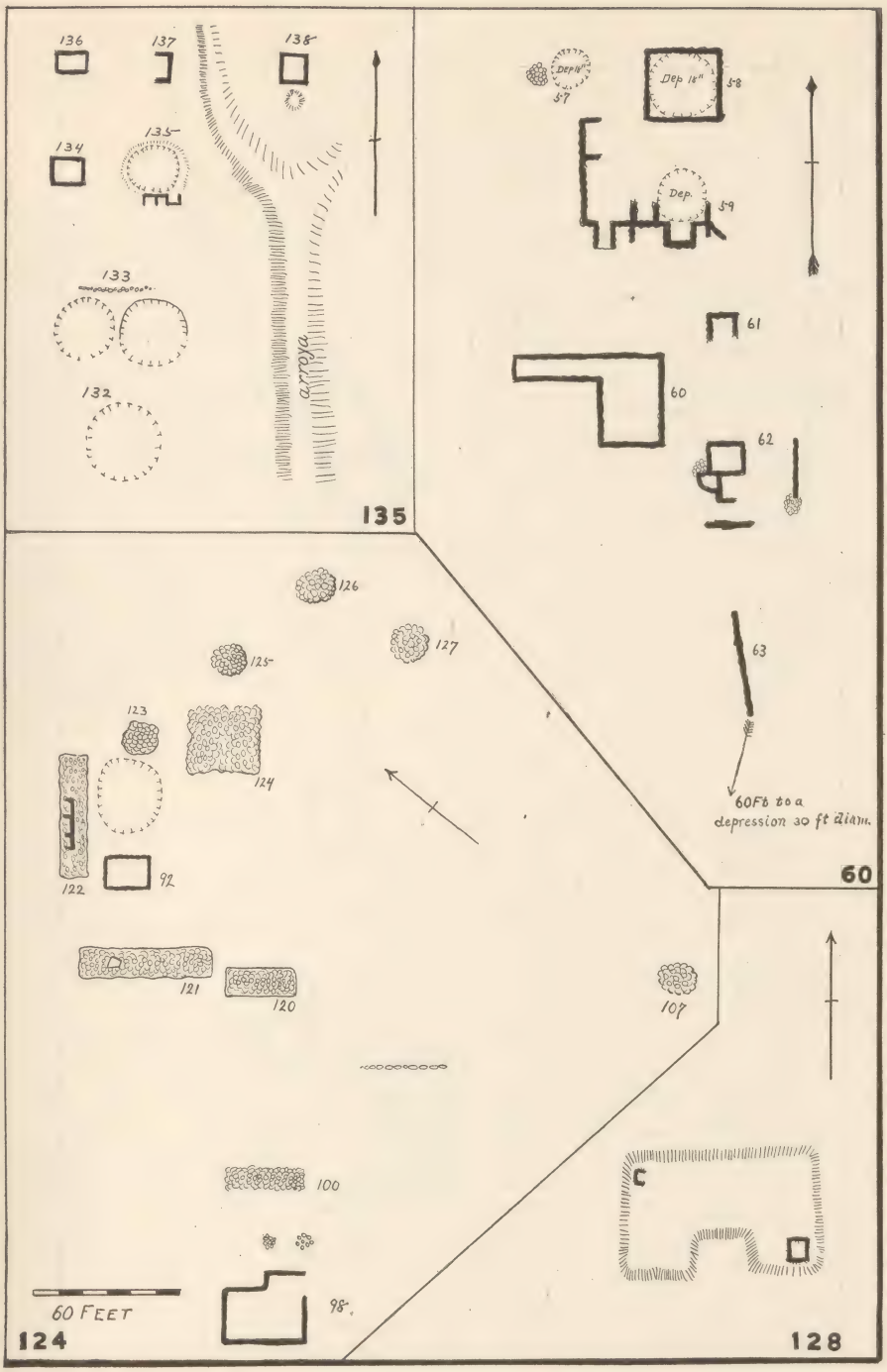

FIG. 33.—No. 60 is map of the Elden Spring pueblo, No. 124 is map of a pueblo one mile west of Elden spring, No. 128 is a small pueblo a mile east of Cliff station, and No. 135 is a group of small houses south of Elden spring.

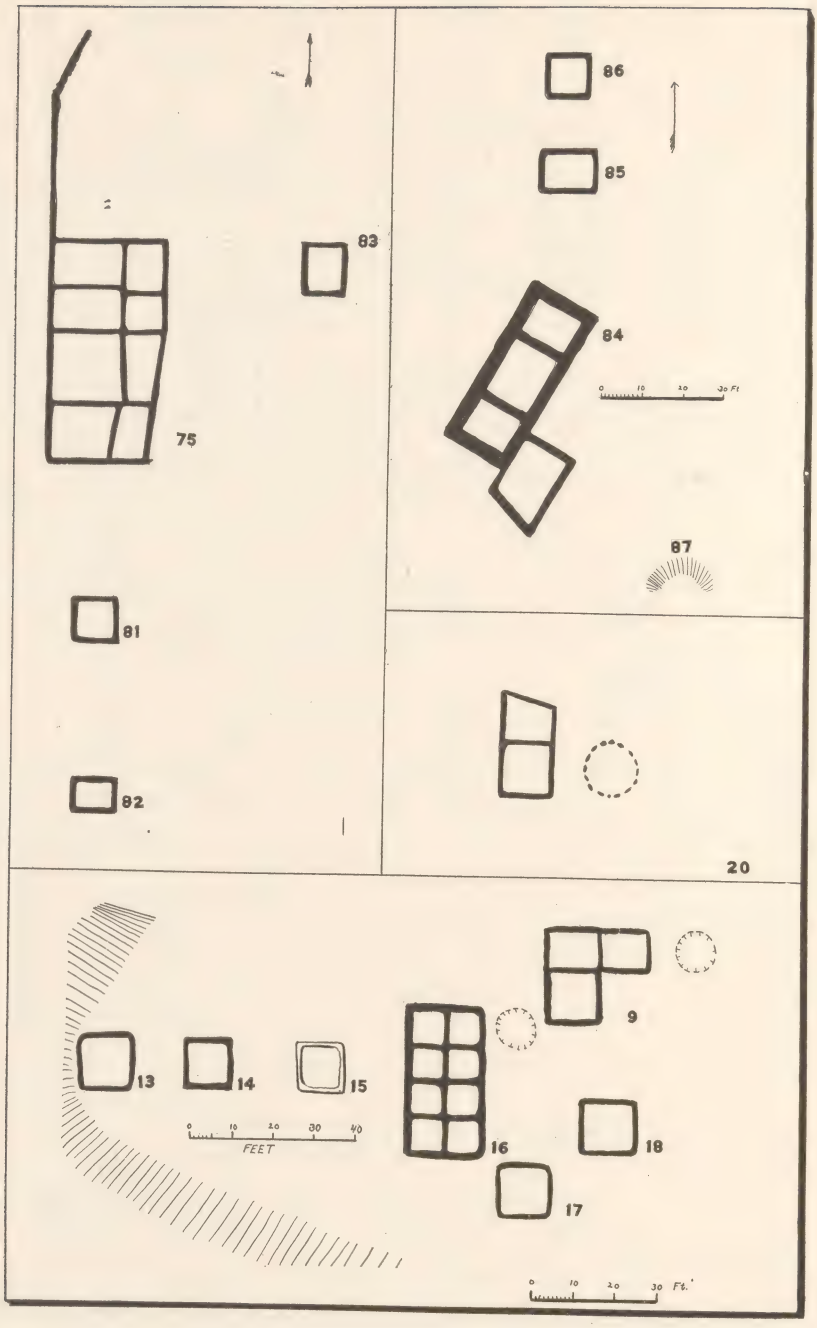

FIG. 34.—Small house ruins near Gourd flat.

(3) Pueblo 142 (Pl. x, fig. 1)

This Pueblo lies on a ridge between two little arroyas on the east side of Elden mountain, northwest of Sheep hill and 200 feet northwest of the logging railroad in Township 22N–R8E Section 31. It was discovered just before our return to the east so it was not completely surveyed. The main building proved to be much larger than any other in this district and in a better state of preservation partly due to rectangular blocks of limestone entering into its construction. That it had been of two or three stories was evident. Around the main building were indications of other one-storied structures of but a few rooms each. It is the largest and best preserved pueblo in the district which is not located on a hill-top. It would be well worth a systematic study. Decorated pottery of both the red and black and black and white occurs in great abundance. It is located about halfway between Springs 37 and Spring 141.

(4) The Winslow Road Group

(Township 22N–R8E Section 36)

These houses are on lava terraces overlooking the valley of the Rio de Flag between Gourd flat and Doney park. The probable source of water supply was in tanks in the Rio de Flag which passes through a box canyon at this point. (Fig. 34, nos. 75, 80–83.)

Casa 75. Eight-roomed house north of Winslow road between Doney park and Gourd Flat. This is the center of a group of one-roomed houses. There was a wall extending toward the north. This house is relatively well preserved and had been built of stone. Some one had tried excavating one of the southern rooms. The pottery was black and white and much red and black.

Casa 80. On a spur of lava, west of Casa 75 and north of the road is a two-roomed house, rooms both 12 × 15. There is a depressed area to the west. Black and white decorated potsherds

Casa 81. 33 feet south of Casa 75. One-roomed—9 × 9 feet.

Casa 82. 33 feet south of Casa 81. One-roomed—6 × 9 feet.

Casa 83. 33 feet east of Casa 75. One-roomed—9 × 12 feet.

(5) Gourd Flat Group

Gourd flat is dominated by New Cave mountain which rises to the north through a series of lava terraces to the cinder and lava cone of the peak 500 feet above the level of the flat.

This district at present is without surface water. The nearest permanent supply is Turkey tank four miles east. The next nearest is the Spring 141 at the foot of Elden mountain six and a half miles west. It is possible to cultivate the lower terraces on the lava flows and also Gourd flat, while it may be possible to grow Hopi corn among the cinder cones to the north.

Artificial tanks in the Rio de Flag if they were not frequently washed out by cloud bursts would hold some water. It would form a very precarious supply at the best. At present there are a few wells in Doney park but most of the ranchers in this region haul their water, some from Turkey tank, others from the wells in Doney park and some even from Flagstaff. In certain seasons all water has failed so all have either to go to Flagstaff or buy water from the railroad.

On the terraces on the north side of the flat are a number of house groups while the greatest group is that of the New Cave Mountain Pueblo which covers the upper part of the cinder cone and which includes the caves described by Fewkes (1897). The present authors did not make a careful survey of this interesting region but they noted a number of things that were not reported by Fewkes.

As is well known the peak of the hill is crowned by a fort with very thick walls, 2 to 4 feet thick. On the north end of the fort the walls include a few dwelling-houses (Casa 7) in which for houses having walls of irregular blocks of lava they are very well preserved. Below the wall to the north are a number of house ruins.

Below the fort to the south are groups of buildings of from two to six rooms. These rooms are notable for their large size and also for the fact that each one has a cellar smaller than the room itself hollowed out of the lava and ash which reminds one of conditions found in the Old Cave Hill Group described by Fewkes. Among these ruins are the foundations of other older houses which had been robbed to build the newer ones. This might or might not indicate more than one occupation of the pueblo. Black and white as well as two shades of red and black decorated potsherds were found.

In a saddle between the two peaks is a leveled off plaza referred

VIEW OF PART OF PUEBLO 142

VIEW OF PART OF PUEBLO 124

to by Fewkes as a reservoir. Beside this is a large building of a single room, 30 × 36, which with its relation to the plaza suggests a ceremonial chamber of some sort. A similar room was seen by the writers at the pueblo above Montezuma's well in the Beaver valley.

As described by Fewkes this mountain is the rim of a crater of a volcano. In the bottom of the crater is a plutonic plug of tumbled blocks of grayish lava. In this there are a number of small house ruins. On the floor of the crater is a large inclosure indicated by a line of stones and now filled with drifting sand. There are strong indications that this formed the reservoir from which the inhabitants of the pueblo above procured their water, as a distinct trail thickly strewn with pottery fragments leads downward from the plaza to the edge of the inclosure. This seems to show that the water supply, at least in certain times in the year, was not nearly so far away as one would imagine. Gourd flat is four hundred feet below the plaza or five hundred feet below the fort. The reservoir in the crater, on the other hand, is but two hundred feet below the plaza and three hundred below the fort.

This New Cave pueblo would be well worth a careful study as it combines in many ways the pueblo and the small house.

On the lava terraces below New Cave mountain are a number of house groups. These are figured in fig. 34.

Casa 16. Located on the flank of New Cave mountain was a house of eight rooms of which was the center a number of other houses. This had relatively small rooms, 9 × 9. Many of the rooms of the houses in this group had had cellars like the ones described above. (Fig. 34, no. 16.)

Casa 15. Directly to the west of 16 were the foundations of an old house, the building material of which had evidently been taken to build the others in the group.

Casa 14. Further to the west was another house which had had a cellar.

Casa 13. Still further west was but an outline. This was probably an older house the material of which had been robbed to build Casa 14 or Casa 16.

Casa 17. One-roomed house, 12 × 13 feet.

Casa 18. One-roomed house, 12 × 12 feet.

Casa 19A. A three-roomed house—rooms 12 × 12, 9 × 12, 9 × 12.

Casa 19B. Faint traces of a house to the west of 19A.

Casa 19C. Faint trace of a house to the east of 19A..

Casa 20. Just to the west of Casa 16 on a lava flow 50 feet lower is a two-roomed house with a circular row of stones to the east of it. This is the only place in the whole region where a circular ruin is indicated. It suggests that here we might have an estafa such as are found in the San Juan region. The circular row of stones appears older than the house beside it. On the other hand it might be what is left of a Navajo hogan of much later date. The house has two rooms, one 12 × 12, the other irregular 12 × 9. The larger room had a cellar like those in the pueblo above.

Casa 84. On the lower terrace overlooking Gourd flat. There was a four-roomed house. Three of the rooms surrounded by extremely thick walls 2½ to 3 feet thick. These rooms are 9 × 12, 12 × 15 and 9 × 12. To the south is an irregular room with thin walls 18 × 12. Black and white decorated potsherds found.

Casa 85. North of Casa 84. One room, 9 × 12. Has had a cellar.

Casa 86. Twelve feet north of 85. One room, 9 × 9.

Casa 87. A mound SE of Casa 84.

These are only a few of the houses in this neighborhood. Several others lay within a hundred yards of Casa 84.

(6) Fortress Hills Group

The houses of this group are scattered over an area three miles wide and four miles long, having as a center a fort on one of a group of unnamed hills three miles southwest of Turkey tanks, which we have called Fortress hills. (Fig. 28.)

Arable land may have been in the cedars west of the hills or between the hills and Walnut creek. Water may be procured at certain seasons from three sources, by digging in the sandy bed of Walnut creek a mile and a half east, from Turkey tanks three miles northeast or from the lower end of Walnut canyon two and a half miles south. In dry seasons all of these sources but the last mentioned will go dry.

Fort 52. Township 21N–R9E, Section 5. This fort is located on a lava cap on the central peak of Fortress hills. It is sheer twenty or thirty feet on all sides but there is a talus at some points which allows access to the top. All places that can be scaled are defended by walls, 2 to 3 feet thick, as is shown on Fig. 35, no. 52 and pl. XI. A trail in a crevice on the southeastern end allows one to approach the top. Although the evidence is quite strong that the fort belongs to the era of the small house ruins associated with it, yet there is a chance that Apaches may have constructed the walls out of earlier ruins—a relation found by Hough at Forestdale. These ruins are as follows.

TOP OF FORTRESS MOUNTAIN SHOWING LAVA FLOW ON WHICH IS LOCATED THE FORT

ONE OF THE WALLS OF THE FORT

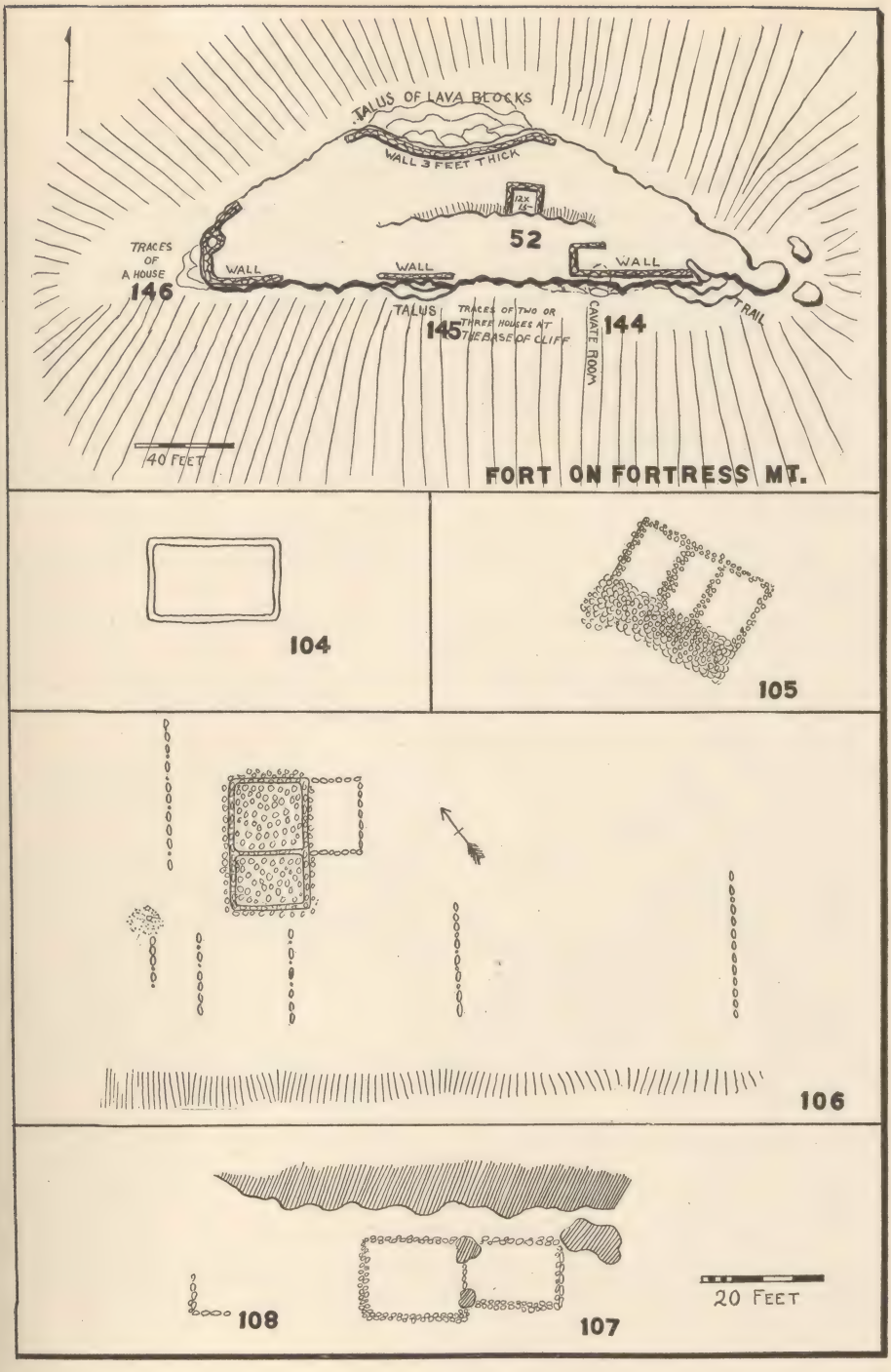

FIG. 35.—No. 52 is the fort on Fortress hill. Nos. 104, 105, 106, 107, 108, etc., are small houses near by.

Casa 52A. A house partly made by the southeast wall.

Casa 52B. A house located in the center of the fort, one side of which is made by a little cliff. Size 12 × 15 feet.

Casa 52C. A small round tower at the lower or westernmost end of the fort. The inside diameter of this is scarcely 3 feet, not large enough to shelter one man.

Casas 51A and 51B. Two small houses on the shoulder of the north peak.

Station 53A. Area of abundant sherds in the notch between the central and the south peak.

Station 54B. An area of abundant sherds in the valley between the same peaks just west of 53. It is possible that the sherds found at 53 and 54 were really from some houses that were tucked away under the south side of the lava cap above. Large fragments of black and white pottery are very abundant.

Casa 144. Is a cavite room on the south side of the Fortress mesa near the trail to the top.

Casa 145. Faint traces of one or more houses at the base of the cliff.

Casa 146. Traces of a house among the boulders at the west end of the Mesa.

Casa 148. Traces of a house among the boulders of a very recent lava flow north of the Carlos ranch, Sec. 34, Township 22N–R9E.

Casa 119. On an eastern shelf of Fortress facing Crater hill.

Casas 109 and 110. On a little mesa east of school house are two areas of numerous sherds. No distinct ruins present.

Casa 104. Sec. 17, south of railroad and south of Walnut canyon—Winona road. Single-roomed house 12 × 20. Red and black, black and white potsherds found. (Fig. 35, no. 104.)

Casa 105. Sec. 16, south of the Walnut canyon.—Winona road on a terrace overlooking an arroya in a shallow canyon is a house of probably six rooms. Three rooms are distinct, 9 × 12, 6 × 12, 9 × 12. The other rooms are covered by debris. Black and white decorated potsherds found. (Fig. 35, no. 105.)

Casa 106. Sec. 15. In Walnut canyon on a terrace overlooking the dry Walnut creek. It is of three rooms, 9 × 12, 12 × 12, 9 × 12. It is particularly interesting on account of numerous parallel walls on the terrace. At right angles to the axis of the Canyon, black and white decorated pottery found (Fig. 35, no. 106.)

Casa 107. Sec. 15. At the base of the cliff where Walnut canyon makes its first bend is a small house ruin of two rooms, 12 × 61 and 11 × 16. This house stood about four feet out from the cliff which is notable in that it is not against the cliff.

Casa 108. Is just a few feet west of 107. It is an older house, the building material from which probably went to construct 107. Black and white and red and black decorated potsherds. (Fig. 35, no. 108.)

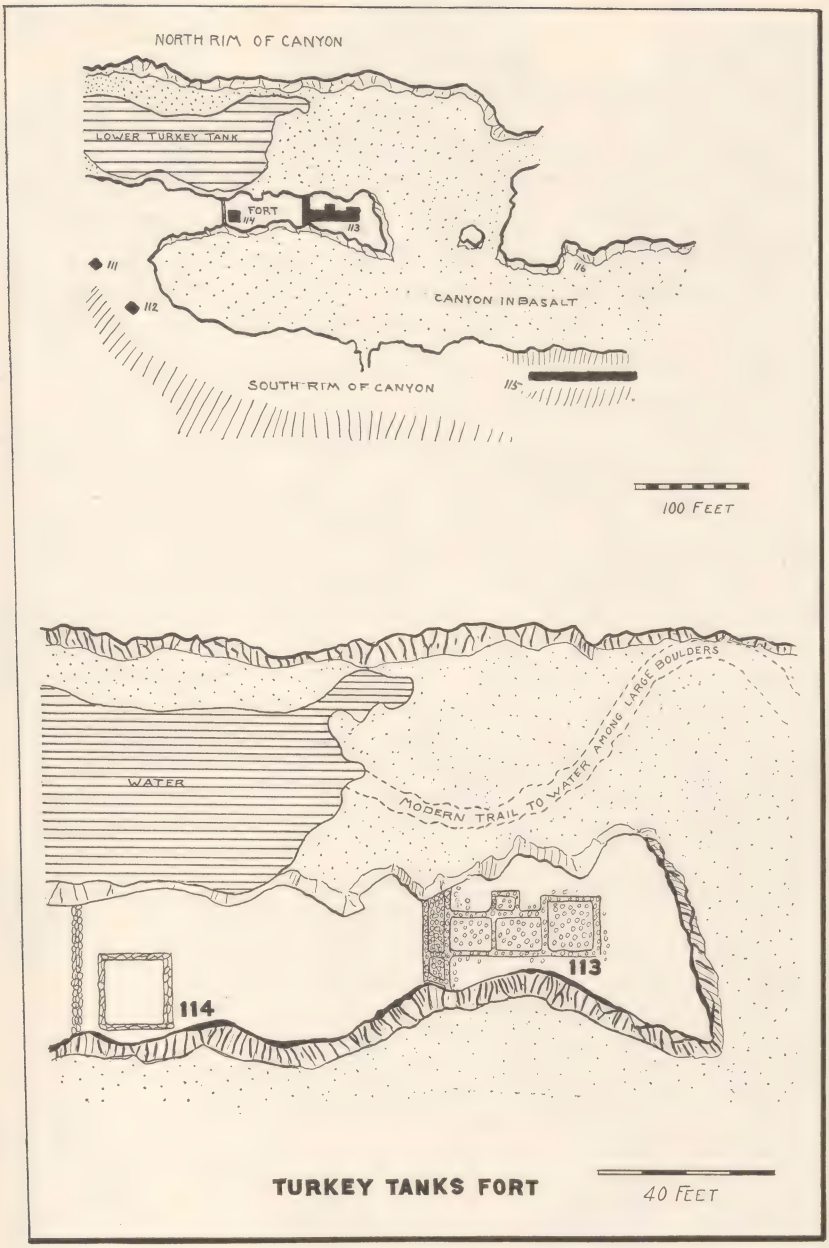

FIG. 36.—Map of the fort at Turkey tanks. Below is a plan of the houses within the fort.

Turkey Tank Group

(Township 22N–R9E, Sec. 25, 26, 36)

The permanent natural reservoirs known as Turkey tanks form a center for a group of ruins the best known and best preserved of which are the Turkey Tank caves (117). As these have been described by Fewkes, no mention will be made of them here except to add that indications of a wall can be traced across part of the flood plain of the stream below the cave pueblo. As there is no permanent water supply at present in the pool below the pueblo this might suggest part of a dam. However, there are many reasons why this is not so but it would be inadvisable to discuss them here. Black and white sherds are abundant.

Fort 113. Fig. 36. Turkey tanks are pools in the bottom of a canyon cut by Walnut creek through a lava flow. This canyon is thirty or forty feet deep. Near the lower pool there is a peninsula, a little over a hundred feet long, jutting out into the canyon. In the widest place it is less than fifty feet, in the narrowest about thirty. The walls of the canyon at this point are precipitous from fifteen to thirty feet high. Across this neck of land are two walls; an ancient outer wall and an inner more recent one. Of the ancient wall nothing remains but the foundations. The recent wall is still five or more feet high, fallen stones indicating that it was once much higher. Within this wall is a building apparently of three main rooms with traces of three smaller rooms (see plan).

Casa 114. This is an ancient one-roomed house the material of which has gone to build Casa 113.

Casas 113 and 114 together form a fort unique as forts of this region go, because water could be procured by lowering an olla over the edge of the cliff without leaving the shelter of the outer wall. Black and white potsherds were abundant below the fort.

Casas 111 and 112, south of Turkey tank and west of the fort, are small one-roomed houses of which the foundations alone remain.

Casa 115. Is a house of many rooms in a row facing the canyon southeast of the fort. They are much ruined and hard to make out.

Station 116. There are pictographs on the north side of the canyon opposite Casa 115.

Casa 118. One-roomed house on hillside, one-half mile NE. of Turkey tanks. Not measured.

Pottery

The potsherds (fig. 37) collected from the various sites in this region are fragments of ollas, bowls, dippers, and corrugated cook-

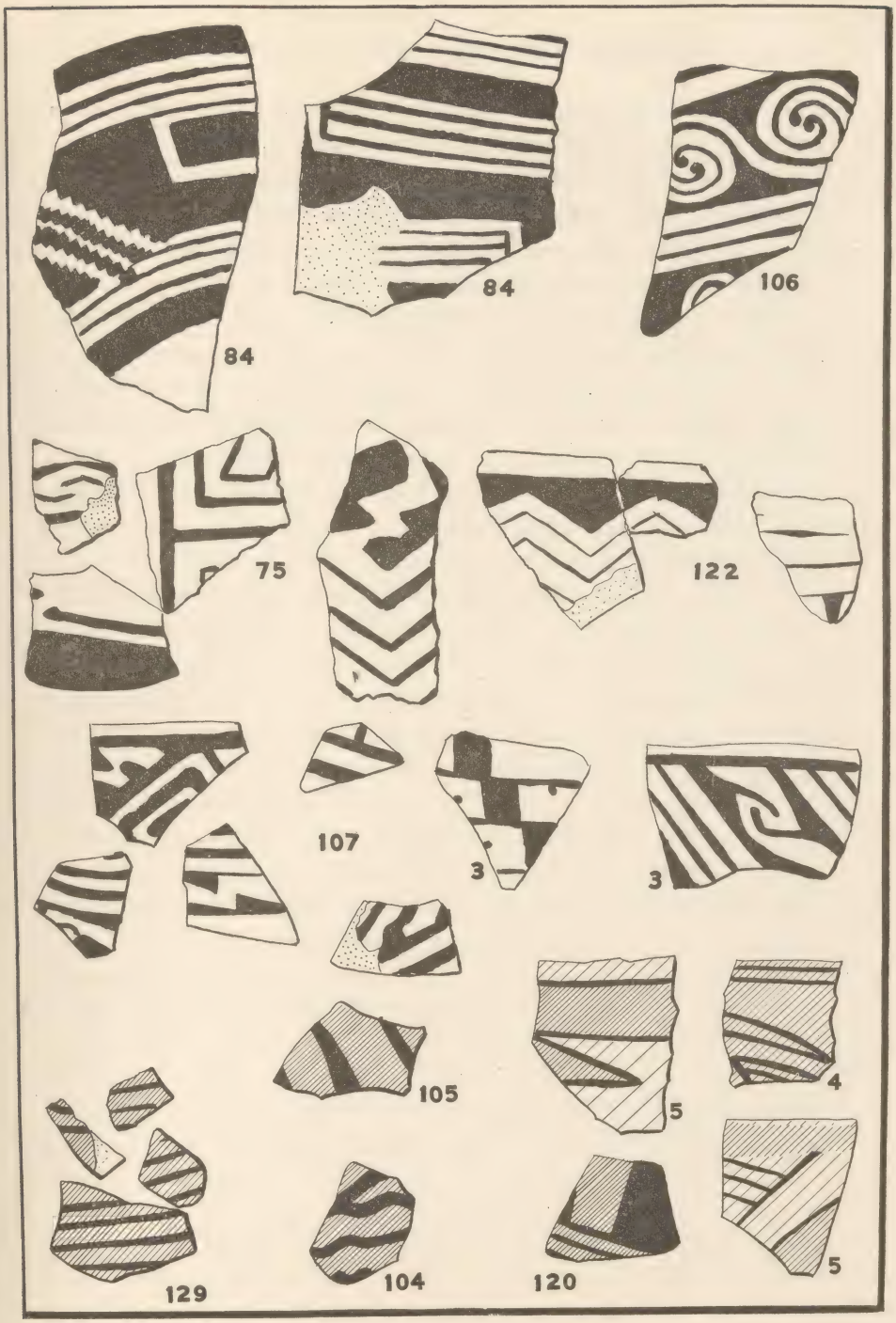

FIG. 37.—Potsherds. Those that are cross hatched are red.

ing jars, all characteristic of the pueblo culture. Of decorated pottery but two kinds have been found in this region. The most abundant is a fine grained white ware with geometrical designs in black. With this on some sites is associated a red ware with similar designs. No characteristic Hopi potsherds were collected in this district, nor any with obviously symbolic designs.

With the small house ruins various authors have associated but one kind of decorated pottery other than the corrugated ware; the fine-grained white ware with the geometrical designs in black. Nelson (1916) in the Galisteo basin of New Mexico has shown that this type of pottery is the most ancient type of decorated pottery, it being the only type found at the bottom of certain ancient refuse heaps. Many of the small house ruins in this region have associated with the characteristic black and white pottery, red with black decorations. In the Elden Spring region the few sherds of decorated red ware found are ornamented with rather fine black lines. To the east among the better preserved ruins at New Cave mountain the red decorated pottery is more abundant, the design more complicated often employing two shades of red. This was characteristic of but one site in the Elden Spring district, Casa 25. A careful study based on far larger collections of potsherds from each site might allow some conclusions to be drawn. With the small collections on hand it would be unsafe to attempt to use potsherds as a basis for the comparison of one house with another.

Trails

Two fairly distinct trails blazed by fragments of broken ollas were traced, one from Elden springs to Pueblo 124 and the other about a third of the way between Elden spring and Pueblo 142. It was a very clear trail and could have been traced much farther. No doubt other trails of this type could be discovered.

Occupation

It is probable that a number of these houses served as summer shelters only, therefore we have little reason to believe that they were all occupied at the same time. It is well known that the

Indian, not using fertilizer on his cornfields, is obliged to allow his fields to remain fallow following a number of years of cultivation. The result of this would be an abandoned shelter. After some years the ruined shelter might be rebuilt perhaps by a different individual or a new site near by might be selected.

In this region there are indications of two periods of general occupation. One which is represented by the faint pueblo at Elden spring (60) as well as most of the detached houses thereabout, by the fort on Fortress mountain and by the houses 111, 112, 115, at Turkey tank and perhaps the houses on the rim of Walnut canyon.

The latter occupation of the country is represented in the Elden district possibly by Pueblo 124. In the eastern district this later period of occupation is represented by Pueblo 142, the pueblo on Old Caves hill (72), by the pueblo on New Cave mountain, as well as the small house groups about Gourd flat, the Pueblo at the Turkey Tank caves, Casa 113 in the Turkey Tank fort and the cliff houses in Walnut canyon. This age relation is correlated with three other factors; in the earlier period the houses had larger rooms, used little stone in their construction and in general did not consider defense in choosing a site. Only excavations will prove if this hypothesis is correct.

A number of other questions can be solved by excavating. Only by such means can it be possible to separate the summer shelters from the permanent residences. The burial places are unknown. As this country is rapidly being fenced in and large portions taken up for agriculture it is important that a serious study of this region be soon undertaken; otherwise, it may be too late.

Summary

In the summer of 1916, in the neighborhood of Flagstaff, Arizona, the authors discovered a number of ancient dwelling sites and ruins not previously described by archaeologists working in the region. They consisted of various types, as follows: camp sites of wandering hunters, summer shelters occupied by Pueblo Indians,—tending their corn fields, small houses of permanent residence, pueblos or villages and forts.

In many of the ruins underground chambers formed an interesting feature. While deep depressions were found upon most of the sites, no positive evidence could be had of the existence of kivas or estufas. A circular line of stones, discovered in one instance, may have represented the remains of a Navajo hogan or Apache shelter of much later date. Although many were grouped about springs and tanks, others were as much as five miles from a permanent water supply. There were indications of at least two successive occupations of the country. A systematic study of these ruins would lead to interesting results.

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